“Tree Radio”

by Magz Hall

Magz Hall is a sound, radio artist and co founder of *Radio Arts*, exploring the artistic potential of radio and its use outside of conventional settings. Her work has been exhibited by the Tate Britain, British Museum, the Sainsbury Centre, Yorkshire Sculpture Park (YSP), MACBA to name but a few. As a former director of the Community Media Association she successfully helped push for community arts radio in the UK and was a founder of London’s arts station Resonance FM. She was a finalist in The Engine Room’s international sound art competition (2015). Magz holds a PhD from the University of the Arts London and is senior radio lecturer at Canterbury Christ Church University.

https://magzhall.wordpress.com

http://www.radioarts.org.uk

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This page: "Tree Radio" radio receiver

Introduction

I have been working at the intersection of art and technology, critically examining how radio circumscribes the realms of public and private. My radio art research draws on a hundred years of experimental radio, examining this accumulated history and knowledge in the light of contemporary circumstances. My work is intrinsically participatory, orientated towards provoking social encounters by producing original sound and radio art projects. My practice based PhD entitled *Radio After Radio: Redefining Radio Art in the Light of New Media Technology through Expanded Practice* (Hall 2015) explores the development of radio art in an international context.

In recent years I have developed several research led works which make reference to radio art's rich history. Taking the proposed 'switch off' of analogue radio as a grounding from which to develop new radio art works, I have brought the changing relationship between the analogue and the digital into a politically engaged and imaginative discursive framework which draws explicitly on contemporary conditions of the 'post digital'.

Tree Radio

Tree Radio (2015) was made during an *Art for the Environment* research residency at the Yorkshire Sculpture Park (YSP)[1] and enabled me to draw from my research and produce a new sound installation which is currently on exhibition at YSP. The work transformed an oak tree at the Sculpture Park into a micro radio station; a transmitter embedded into the tree relays the tree's reactions to light, motion and moisture via sensors and probes in the tree's canopy. These are heard as a series of fluctuating electronic tones that visitors can tune in and listen to via their own personal radios or mobile phones with an FM receiver while in the vicinity of the tree.[2]

1 Find the Yorkshire Sculpture Park website at at http://www.ysp.co.uk

2 Also see http://www.ysp.co.uk/exhibitions/magz-hall

Tree Radio addresses issues surrounding the rate at which new digital technologies become obsolete, using 100 year old tried and tested wireless technology. I wanted to make people think about trees and the root of all wireless technology: analogue radio; and how simple and green it can be to use - in this instance wireless, free and solar powered. The tree transmitter reveals the hidden facets of organic tree life using simple FM wireless technology.

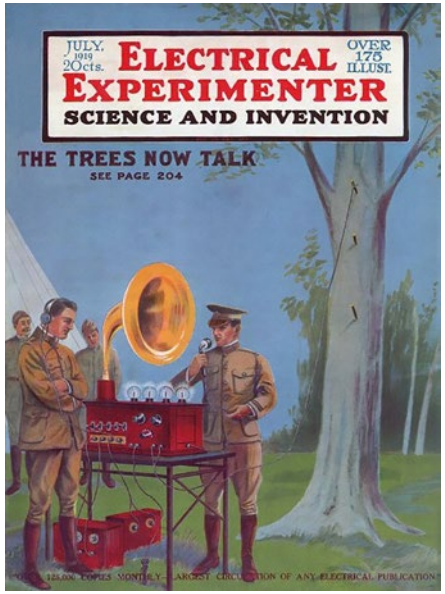
General George Owen Squire, a U.S. Army's Chief Signal Officer and incidentally the inventor of Muzak,[3] back in 1919 described how "[all] trees, of all kinds and all heights, growing anywhere—are nature's own wireless towers and antenna combined" (1919). He called this "talking through the trees." He used trees as antennae through which to pick up radio signals for the army. However, I wanted to do the reverse, using trees to send out a radio signal and I loved the idea of actually hearing the trees 'talk'.

The tree enables its own sonification, it is not trying to conform to the musical techniques charged by Nye as being "emotionally loaded by virtue of sounding "mythical and spiritual "(Nye 1994, p. 5) and what Supper calls an "auditory sublime" (Supper 2012). Instead, *Tree Radio*'s raw electronic tones, which are produced by hand built oscillators using the same type of components I have used to make the transmitter, aren't subject to the conventions

of musicality which can lead some environmentally-generative works to resemble a form of anthropocentric 'Muzak'. The analogue electronics have their own intrinsic instability; the tonalities and broadcast frequency are subject to the contingency of the surrounding environment.

Tree Radio allows poeple to hear the tree responding to the stimuli of its immediate environment. New digital wireless masts are often disguised as trees and this is a playful way of getting people to think about trees as transmitters as well as revisiting radio's early

3 MUZAK is the ubiquitus recorded light background music played through speakers in public places.



military history. The other aim of the project was to connect visitors with radio technology and simple electronics.

Developing the project

The initial idea for *Tree Radio* was sparked during an artists' residency at the LV21 lightship back in 2013. Since then I had been looking for the right place, time and a commission to put my ideas into action, and refining them into a proposal.

Another work, *Spiritual Radio* (2014)[4] book radio, was also conceived of at the same time and was quickly realised and took precedent. In this period I'd been imagining who would be 'squatting' FM airwaves, as had Geert Lovink who pondered that "We can squat soon (to)–be- abandoned FM and AM Frequencies" (2011). I had taken his speculation a step further for theoretical exploration, as my radio works around this theme - or 'trace stations' as I call them - offered up fictional insights into who might be squatting the FM spectrum in the future. *Spiritual Radio* and *Radio Tree* were the logical conclusion to this process, as they imagined new FM stations broadcasting directly from objects and nature - in this case books and trees. Until recently, piracy laws had limited the artistic exploration of transmitters. However, deregulation on low power FM devices such as car transmitters and baby monitors have made them exempt from licensing, affording me an artistic opportunity to use them.

As I had been mulling over *Tree Radio* for a while, I got very excited when I heard about the call for the *Arts for the Environment* summer residency at YSP. It was ideal place to research and develop the work and in fact it had been on the top of my location wish list. Uncannily, I found the flyer for the call by chance as I was handing in my PhD, and my final words in my thesis are about how I wanted to develop the *Radio Tree* project.

"Someday artists will work with capacitors, resistors and semi-conductors as they work today with brushes, violins and junk." In 1965 Nam June Paik (in Reichardt 1971) predicted a radical and exciting future for artists and technology, this quote sums up something I have been embracing in my own research and recent sound and radio installations. *Tree Radio* enabled me to refine the FM transmitter circuit, which I had started on *Spiritual Radio*. I presented the circuit in its most basic and functional form, revealing its simple geometry. I had moved from merely mastering relevant techniques to being able to adapt it into a functional aesthetic form,

4 Find more about the lightship at http://www.lv21.co.uk
For *Spiritual Radio* see https://magzhall.wordpress.com/spiritual-radio/

easily understood and read on a tree. Where possible I avoided hard corners and moved away from the breadboard technique of uniform squares to work with the shape of the components and location. At the same time there is an interesting juxtaposition between nature and technology seen in the physicality of the work, for some the fact it was nailed into the tree was read as an act of violence towards nature however for me it is an allegory of the unease between technology and the environment.

Installation

The YSP residency presented the opportunity to adapt the techniques I had honed in controlled, indoor environments to function in the face of the elements. Waterproofing the transmitter became the first essential task; my first week in the sculpture park was a wet and windy eye opener on just how soaked the trees and visitors to the park could get. It was thrilling to hammer the nails upon which I would thread together my circuit into the tree and visitors to the park were very keen to engage with my process. There was something primal, exhilarating and poetic about creating this radiophonic prosthesis on a living organism, the tree as living electrical 'bread board' for its own transmission.

Bespoke light sensor

However, in this unprotected form the transmitter was very unstable and after a few days the frequency started to float due to the tree's own moisture and the weather. The waterproof resin I had used to protect the circuit from the elements had the unfortunate side-effect of insulating particular components and stopping the transmitter functioning. Although it was part of my aesthetic vision to have the circuit exposed, allowing the viewer to follow the transmission circuit and making the process visible, waterproof casing was really the only option in order to keep the transmitter stable enough for long term use.

Hand-built solar panel enclosure and sensors

I had just two weeks at the YSP site to research the initial idea further, to develop it and put it into practice, which was an extremely short period of time and proved to be a very intense way of working. I invited the sound artist Anthony Everett on board to make the light sensors and resistance probes which would convert the environmental parameters of the tree into electrical impulses that could be acoustically translated.

I really enjoy collaborating and this was no exception; Anthony really helped me to push things forward in the very short time frame we were given, and we both learned a huge amount from each other. The light sensors he produced change frequency as the sun moves through the leaves and branches of the tree and via the tree probes made from a nail, sound is affected by the resistance of water in the tree. Both work through simple oscillator circuits which change as moisture levels inside the tree fluctuate. These are then micro broadcast as electronic sound signals directly from the tree. They are faster or slower, higher or lower depending on the amount of light and water present. Overall stability needs to be monitored, so we can work out the optimal requirements of all the parts.

The installation needed to be powered sustainably; it would have been not only impractical, but environmentally unsustainable (especially in the context of an arts for the environment residency) to power the work with depletable batteries, so it seemed an obvious solution to embrace solar power. I cased two nine-volt solar panels in sealed perspex and these have so far proved to be resilient. It will be interesting to also refine the light sensors and nail probes further and look into their scientific applications.

Installing "Tree Radio"

It was extremely exciting and gratifying to finally hear the tree broadcasting on 100 FM. A very clear signal was achieved, one which changed continually throughout the tree's day. The transmitter on the trunk remains as a symbol, representing the selfsame process that is occurring, housed in a less aesthetically pleasing watertight box, higher up in the branches. Visitors to the Yorkshire Sculpture Park are able to pick up the gently emitting tree broadcast on their own personal FM devices at around 97.5 FM.

The future

For me this is *Tree Radio,* Phase One - there is so much more work to do from a sound, scientific and visual perspective as ultimately I want the electronics to be seen, rather than to be hidden as they are at present to keep them safely dry. I am now thinking about refining the set-up and am considering the possibility of building a crystal transmitter which will lock the frequency so it can't shift around as much when affected by coldness and general weather conditions.

The £300 budget was eaten away on this very simple set up and installation and further funding is needed to improve the work and develop long-term strategies. I have just received a research award of £500 from the Faculty of Arts and Humanities at Canterbury Christ Church University which will enable me to return to YSP to give *Tree Radio* an MOT in early spring

YSP were extremely supportive of *Tree Radio;* it was hugely beneficial working with the curators and the team and it was fascinating to learn about the park. Being at YSP made me connect with traditional sculpture in myriad of ways and generated the seeds for new ideas. This experience will have a lasting effect on my work.

Visitors in front of "Tree Radio"

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